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COMPLETE SPECIFICATION

Improvements in or relating to Foot or Like Imprinting Devices

We, THE SCHOLL MANUFACTURING COMPANY LIMITED, a Company incorporated under the laws of Great Britain, of 190, St. John Street, London, E.C.1, England, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to improvements in a foot or like imprinting device, and more particularly to a device constructed to provide an accurate imprint of the plantar surface of the human foot upon a reference card or the like to aid a physician, surgeon, or chiropodist in diagnosing the ailments and arranging proper treatment for the particular foot or other member such as a hand for example.

In the past, many and various types of devices have been provided for the purpose of making an imprint of the plantar surface of the human foot. However, these formerly known devices were objectionable in a number of respects, in that many of them were not readily transportable from place to place and could not be manipulated with sufficient ease and rapidity. In addition, devices of this character heretofore known were frequently prohibitively expensive for wide usage, and many of them were not capable of giving an accurate imprint repeatedly owing to the different degrees of pressure upon the device by the different patients, and also owing to the fact that the device itself was not capable of providing varied shading in the imprint to clearly bring out deformities of a particular foot.

One of the objects of the present invention is to provide a foot imprinting device that is exceedingly small in size, light in weight, readily usable, and very economical both to manufacture and use. Another object of the present invention is the provision of a foot imprinting device that is foldable in the manner of a book, and so light in weight that it may readily be carried in the pocket of the practitioner and which in use clearly denotes at a

glance the position and relative size of deformities or afflictions of the particular foot.

According to the present invention a foot or like imprinting device comprises a pair of shallow internally dished cover members hinged together, a frame between the cover members, and a flexible member mounted on one side of the frame in spaced relation to an impression receiving surface in the device whereby when the flexible member is marked with a marking substance on the inner side it can be caused to yield into contact with the surface by pressure of a member such as a foot on the opposite side of the flexible member to make an imprint on the surface.

Preferably the imprinting device comprises a pair of hinged cover members, a frame disposed between and hingedly associated with the cover members, an imprinting diaphragm carried by the frame, and a heel guide pivotally associated with the frame and movable into operative position when desired, the entire device being exceedingly light in weight, and compact, when in folded position. In order that the invention may be more clearly understood one construction in accordance therewith will now be described by way of example with reference to the accompanying drawings in which:—

Figure 1 is an end elevation of a foot imprinting device embodying the principles of the instant invention, showing the same in folded position for storage or transportation;

Figure 2 is a fragmentary plan view of the foot imprinting device in open position, indicating the application of the marking substance to the device prior to making an imprint of a foot;

Figure 3 is a greatly magnified fragmentary view of a portion of the imprinting diaphragm with the imprinting surface thereof uppermost;

Figure 4 is a fragmentary plan view of the imprinting device in open position and ready

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to make an impression or imprint of a foot;

Figure 5 is a transverse vertical sectional view taken substantially as indicated by the line V—V of Figure 4, looking in the direction of the arrows; and

Figure 6 is a fragmentary transverse vertical sectional view illustrating the mounting of the heel guide.

In the Figures the same numerals are employed to designate the same or similar parts.

Referring to the drawings a foot imprinting device has a pair of cover members 1 and 2 which are hingedly connected along adjacent side edges by means of a hinge pin 3, each cover member being provided with a series of spaced sleeve-like portions 4 through which the hinge pin extends, those sleeve portions of one cover member alternating with those of the other.

Each cover member is substantially of the same construction as the other and each comprises a shallow internally hollow member. An annular rim 5 extends around three sides of each member to define a shallow hollow 6 in each member. Along the side of each member opposite the hinge pin 3 are complementary latching means 7, which may be suitable friction engaging elements which may snap into closed position, and easily be released by finger manipulation, in the manner of the commonly known purse fastening.

The cover members 1 and 2 may be made of any desirable or suitable material, but to provide extreme lightness in weight, they may satisfactorily be made of a thermosetting plastic, such as a thermosetting resin or a phenolic condensation product. Each of these cover members is made of suitable thickness so that when one of the members rests flatly upon a floor or the like, that member will readily withstand the weight of a human body.

Disposed between the cover members is a frame 8 which may well be formed by a heavy wire bent into substantially rectangular shape or a shape complementary to the contour of the cover members. Preferably at two or more points this wire is provided with an outwardly extending sleeve 9 by means of which the wire is pivotally mounted on the hinge pin 3, the sleeves 9 extending between adjacent sleeve-like formations on the cover members. Carried by this frame is a flexible imprinting diaphragm 10. Preferably this diaphragm may be made out of rubber-like material, such as rubber or synthetic rubber, so as to have an inherent recovery power after being stretched by the weight of a foot thereon. It will be noted particularly from the showing in Figure 5 that the diaphragm is so mounted as to overlie one side of the frame, allowing the thickness of the frame to provide adequate spacing of the diaphragm from the cover member 2, so that the diaphragm will not be brought into contact

with a reference card 11 (Figure 2) disposed against the inside face of the cover member 2, until it is forced into contact with that card by the weight of a foot applied against the opposite face of the diaphragm.

Preferably, the imprinting diaphragm is formed with a loop in its marginal portions to embrace the frame 8 as indicated at 12, and at intervals the diaphragm is notched as indicated at 13 and 14 to provide ready access to the frame for pivoting purposes without contacting the diaphragm, and to avoid contact with the connection between the frame and the pivot loops or sleeves 9.

The foot contacting face 15 of the diaphragm is preferably smooth, while the opposite or imprinting face 16 of the diaphragm is provided with relatively minute cross ribs thereon. As seen best in Figure 3, these cross ribs are of varying depths. Throughout the ribbed surface of the diaphragm, in the illustrated instance, the cross ribs are arranged so as to generally define squares. As seen in Figure 3, a large square is formed by cross ribs 17 of the greatest depth. Inside that square is divided into four smaller squares by cross ribs 18 which may be a very few thousandths of an inch less in depth than the cross ribs 17. Each of the smaller squares is again divided into four still smaller squares by means of a series of cross ribs 19 which are preferably a very few thousandths of an inch less in depth than the cross ribs 18. As stated above, the cross rib-construction is very fine, so that the large squares defined by the cross ribs 17 may each have sides of approximately one-quarter inch in length in the actual structure.

With such cross rib arrangement on one side of the diaphragm, if pressure on the opposite, smooth face of the diaphragm is light, only the cross ribs 17 will mark the reference card 11, whereas a little additional pressure will cause marking by the cross ribs 18, and still greater pressure will cause marking by the cross ribs 19. The printing ink or equivalent marking substance is applied over the ridges of the cross ribs. Consequently, if a foot has a callous on the plantar surface thereof which protrudes outwardly from the normal surface of the foot, that callous will cause marking on the reference card of all the cross ribs and be particularly emphasized in the resulting imprint so that the size and location of that callous is very apparent from the resulting print, rendering diagnosis easy and suggesting proper aid. Thus, it will be seen that all afflictions visible from a print of the plantar surface of the foot will be at once apparent to the practitioner by virtue of the shading in the resultant imprint.

In order to aid in properly positioning a foot over the diaphragm 10 to make an imprint, the device is preferably provided with a heel guide 20, which may well be made of a thin piece of metal, and provided with an integral loop 21 to embrace the frame 8 whereby the

guide is carried by the frame and is pivotal relatively thereto. Preferably, as shown in Figure 2, the sleeve part 21 of the guide is provided with a slot 22 which receives a pin 23 projecting from the frame 8, the slot being dimensioned so as to limit pivotal movement of the guide from a horizontal position to a vertical position and vice versa.

As to the overall size of the device, it need be no larger than necessary for a human foot to be positioned on the diaphragm 10 with sufficient room left for proper flexing of that diaphragm so that an area equivalent to the plantar surface of a foot will be pressed down into contact with the card 11. Thus, it will be seen that the entire device may be of such a small size as to be readily carried in a pocket of the practitioner, or occupy very little space in the practitioner's bag.

In use, the imprinting device requires no special location other than a flat surface, and requires no additional mechanism except a supply of reference cards 11 and a suitable supply of marking substance such as printer's ink or the like.

When it is desired to take the imprint of a foot, it is a simple expedient for the practitioner to open the cover members to flat position as seen in Figure 2, place a card 11 inside the cover member 2, the frame 8 being pivoted so as to be disposed inside the cover 1 with the ribbed surface 16 thereof uppermost. Then the practitioner with the aid of a suitable inking member such as a roller 24 may ink the ribbed surface 16 of the diaphragm. All this time, the heel guide 20 is in its horizontal position overlying the smooth face 15 of the diaphragm so that it is not in the way.

After inking of the ribbed side of the diaphragm, the frame 8 is swung to the position seen in Figures 4 and 5, overlying the inside face of the cover 2 and the card 11. This exposes the smooth surface 15 of the diaphragm, the heel guide is elevated to the position seen in full lines in Figure 4 and also in Figure 5, the foot is positioned with the heel touching the heel guide, and the patient puts his weight upon that foot, forcing the diaphragm 10 inwardly into contact with the card 11 and making a clear impression of the plantar surface of the foot upon that card. This impression will denote deformities and afflictions of the foot by virtue of varied shading, as above explained. When the foot is removed from the diaphragm, this diaphragm automatically restores itself to its original position where it is definitely out of contact with the inside surface of the cover member 2 or out of contact with a card that may be therein for the next operation. It will be seen by the use of the device that there is no need whatever for any of the marking substance to come into contact with anything but the particular reference card during the making of an impression, since when the device is not in use the diaphragm by virtue of the

thickness of the frame 8 is spaced away from other parts of the structure, and there is no need for the practitioner to contact that surface of the diaphragm during an operation. After the last imprint has been made, it is a simple expedient for the practitioner merely to close the cover members to the position seen in Figure 1 and dispose of the device until the next imprinting.

What we claim is:—

1. A foot or like imprinting device comprising a pair of shallow internally dished cover members hinged together, a frame between the cover members, and a flexible member mounted on one side of the frame in spaced relation to an impression receiving surface in the device whereby when the flexible member is marked with a marking substance on the inner side it can be caused to yield into contact with the surface by pressure of a member such as a foot on the opposite side of the flexible member to make an imprint on the surface.

2. A foot or like imprinting device according to Claim 1 wherein a guide is provided at one extremity of the frame to assist in positioning the member for making an imprint thereof.

3. A foot or like imprinting device according to Claim 2 wherein the guide is pivoted to one end of the frame and means are provided to limit movement of the guide between the vertical and horizontal positions.

4. A foot or like imprinting device according to any one of Claims 1—3 wherein the cover members are hinged together along one side of each so as to permit the cover members to open flat, the frame is pivoted between the covers so as to swing from one cover to the other, and a flexible imprinting diaphragm is disposed to overlie one side of the frame whereby with the frame opposite one cover member the diaphragm may be inked and when the frame is moved opposite the other cover member containing a card or like markable surface, the uninked side of the diaphragm can be pressed as by a foot to impart an impression of the foot or the like to the surface from the inked diaphragm.

5. A foot or like imprinting device according to any one of the preceding Claims wherein the flexible member comprises a diaphragm of flexible material having a smooth face for contact by the foot or the like and its opposite face being ribbed to receive a marking substance for imprinting purposes.

6. A foot or like imprinting device according to Claim 5 wherein the ribbed surface of the flexible member has ribs of various depths whereby irregularities in the surface of the foot or the like in engagement with the flat surface of the flexible member will cause the ribs to impart marks of varying intensity to the card or the like.

7. A foot or like imprinting device sub-

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stantially as hereinbefore described with reference to Figures 1—6 of the accompanying drawings.

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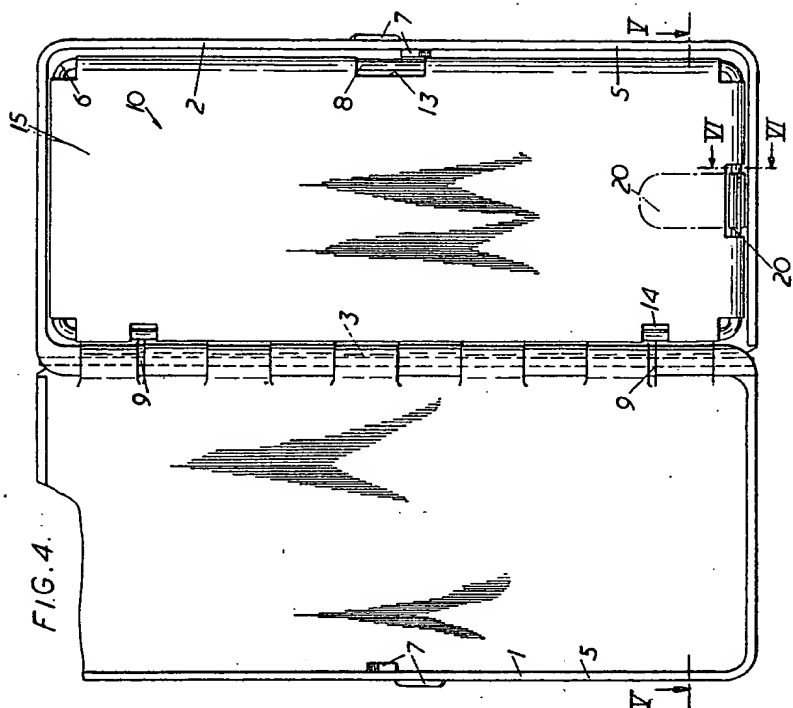


FIG. 4.



FIG. 1.

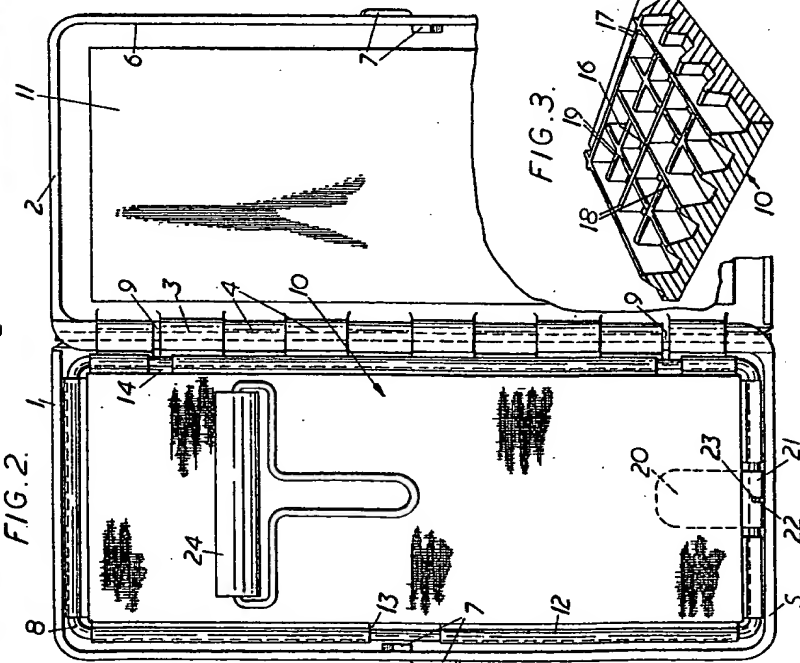


FIG. 2.

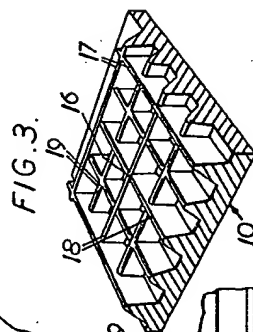
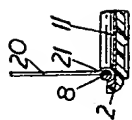
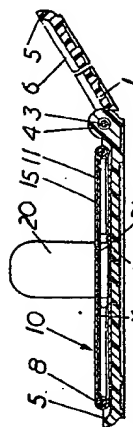


FIG. 3.

FIG. 5.

FIG. 6.



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